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LE, THI Q	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/786,336	Applicant(s) ELLIOTT, BRIG BARNUM	
	Examiner Thi Q. Le	Art Unit 2613	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 26 February 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-80 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5,6,7,8,9,10,12-17,18,19,20,21,22,24,25,26,27,29,31,32-48,50-61,62,64-72,73,74 and 75-80 is/are rejected.

7)☒ Claim(s) 11, 23, 28, 49 and 63 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 26 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 2/26/2004.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) filed on 2/26/2004 was considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-5, 7-8, 10, 12-17, 24-25, 27, 29, 32-42, 46-48, 50-58, 59-61, 64-67, 68-70, 71-72, 75-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Plante (US PGPub 2004/0208602) in view of Pollack et al. (US PGPub 2006/0007885)**.

Consider **claim 1**, Plante clearly show and discloses, a communication method for a retro-reflector device, the method comprising: receiving, at the retro-reflector device (read as,

second transceiver 176; figure 17), an encoded in an input beam (read as, the second transceiver 176 receive the beam; paragraph 0185-0186); creating and sending, from the retro-reflector device, a first reflected beam, the first reflected beam being formed by the retro-reflector device reflecting the input beam along a path closely aligned with a path of the input beam (read as, the second transceiver 176 modulates and encode the receive beam before reflecting the beam back) (figure 17, paragraphs 0185-0186). Plante fails to disclose, the first input beam and reflected beam are frame encoded; and wherein at least one of the first frame and the second frame includes medium access control information.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, the first input beam (read as, transmitted signal from access point 204; figure 2) and reflected beam (read as, transmitted signal from DCD 202; figure 2) are frame encoded (read as, signals transmitted between AP 204 and DCD 202 are encoded in a frame; figure 4b, paragraph 0048); and wherein at least one of the first frame and the second frame includes medium access control information (read as, output frames from AP 204 includes granting/denying access to medium for each DCD 202; and output frames from DCD 202 includes requests for access to medium) (figures 6 and 8; paragraphs 0062, 0066-0068).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 2**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. further disclose, receiving, at a plurality of retro-reflector devices (read as, receiver 225, figure 22), respective first frames encoded in respective input beams; creating and sending, from the plurality of retro-reflector devices, respective second frames in respective first reflected beams formed by each of the plurality of retro-reflector devices reflecting the respective input beam along a path closely aligned with a respective path of the respective input beam (read as, each of the receiver 225 are equipped with retro-reflector type modulator 226, for modulating and encoding the received signal and reflecting it back to the transmitter side; Plante, figures 17 and 22, paragraphs 0185-0186, 0201) , wherein for each of the retro-reflector devices, at least one of the respective first frame and the respective second frame includes medium access control information (note, Pollack et al. discloses the method for medium access control by encoding medium access information within a frame and sending the frame; paragraphs 0020-0023).

Consider **claim 3**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. further disclose, receiving, at the retro-reflector device, a first frame including time information encoded in an input beam (read as, P&A burst sent from AP 204 is use to inform each DCD 202 whether it is permitted to access the transmission medium and if it is permitted then at which time slot it is allows to receives or transmits) (Pollack et al.; figure 8, tables 1-2; paragraph 0067).

Consider **claim 4**, and **as applied to claim 3 above**, Plante as modified by Pollack et al. further disclose, the time information is schedule information including an indication of a next time when the retro-reflector device is to receive another frame (read as, AP 204 transmit a P&A burst including NUM field 814, which indicates the number of consecutive time slot (i.e. INFO

bursts 408) to be received/transmitted by DCD 202 with respective to each DCD 202; this is equivalent to informing each DCD 202 when (i.e. at what time slot) it is allows transmits or receives; paragraph 0067), and the communication method further comprises: receiving, at the retro-reflector device, the another frame encoded in an input beam at the next time, as indicated by the schedule information included in the first frame (read as, each DCD 202 that was authorized to receives or transmit over the transmission medium perform its function at the specify time slot (i.e. INFO burst 408)) (Pollack et al.; figure 8; paragraph 0067; tables 1-2).

Consider **claim 5**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. further disclose, encoding and modulating message bits into the first frame (read as, the payload that are scheduled to be sent from AP 204 to a specify DCD 202 are framed into the INFO bursts 408, then sent at the scheduled time slot (i.e. INFO burst 408)) (Pollack et al.; figure 8; paragraph 0067; tables 1-2).

Consider **claim 7**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. further disclose, in the first frame, an indication of an amount of data for a message within one of the first frame and the second frame (read as, P&A burst includes, NUM field 814, which indicates the number of INFO bursts 408 assigned to a DCD 202, this is equivalent to the amount of data within a message transmitted by AP 204 (figure 8, paragraph 0067); while RA burst includes, BD sub-field 606 which indicates the number of INFO burst 408 requested by a DCD 202, this is equivalent to the amount of data DCD 202 request to send/receive within a message (Pollack et al.; figure 6; paragraph 0063)).

Consider **claim 8**, and **as applied to claim 2 above**, Plante as modified by Pollack et al. further disclose, wherein at least one of the retro-reflector devices receives a respective plurality

of input beams more frequently than at least one other of the retro-reflector devices receives a respective plurality of input beams (read as, if the NUM field 814 for a first DCD 202 is higher than a second DCD 202, then the first DCD 202 is receiving input beams more frequently than the second DCD 202; since there are more information (i.e. INFO bursts 408) to be receive by the first DCD 202; Pollack et al.; figure 8, paragraph 0067, tables 1-2).

Consider **claim 10**, and **as applied to claim 2 above**, claim 10 is rejected for the same reason as claim 7 above.

Consider **claim 12**, and **as applied to claim 2 above**, Plante as modified by Pollack et al. further disclose, wherein: each of the first frames includes a first preamble (read as, ACK field 802 of P&A burst; figure 8) and each of the second frames include a second preamble (read as, RID field 604 of RA burst; figure 6) (Pollack et al.; figures 6 and 8; paragraphs 0062, 0066.

Consider **claim 13**, and **as applied to claim 12 above**, Plante as modified by Pollack et al. further disclose, wherein: the first preambles are different than the second preambles (read as, the ACK field 802 comprises of different data than RID field 604) (Pollack et al.; figures 6 and 8; paragraphs 0062, 0066).

Consider **claim 14**, and **as applied to claim 2 above**, Plante as modified by Pollack et al. further disclose, wherein: each of the first frames include a first preamble (read as, ACK field 802; Pollack et al., figure 8) and each of the second frames include a second preamble (read as, RID field 604; Pollack et al., figure 6), and the first and the second preambles for communications between a remote device and one of the retro-reflector devices is different than the first and the second preambles for communications between the remote device and at least one other of the retro-reflector devices (note, it is inherent that the ACK field 802 and RID 604

field for each DCD 202 must be different, since those two fields are carrying ID number for different DCD 202 and ID number can not be the same for two DCD 202; Pollack et al., figure 8; paragraphs 0062, 0066).

Consider **claim 15**, and **as applied to claim 2 above**, Plante as modified by Pollack et al. further disclose, wherein: each of the first frames includes a first forward error correction code (read as, P&A burst includes FEC field 824 to help ensure the integrity of transmitted data; Pollack et al., figure 8, paragraph 0070).

Consider **claim 16**, and **as applied to claim 2 above**, Plante as modified by Pollack et al. further disclose, wherein: each of the second frames include a forward error correction code (read as, RA burst includes FEC field 608 to help ensure the integrity of transmitted data; Pollack et al., figure 6, paragraph 0064).

Consider **claim 17**, and **as applied to claim 15 above**, Plante as modified by Pollack et al. further disclose, wherein: each of the second frames include a second forward error correction code (read as, FEC 608; Pollack et al., figure 6), and in communications between a remote device and at least one of the retro-reflector devices, the first forward error correction codes are different than the second forward error correction codes (note, it is inherent that FEC field 824 and FEC field 608 are different from each other, since P&A burst and RA burst are carrying different data, thus their FEC field must be different from each other; Pollack et al., figures 6 and 8, paragraphs 0064, 0070).

Consider **claim 24**, Plante clearly show and discloses, a receiving portion (read as, second transceiver 176; figure 17) configured to receive an incoming beam from a device and to decode the incoming beam (read as, second transceiver 176 receives an optical beam and

decodes the beam, then modulates the beam and reflects the modulated beam back to the transmitter side; figure 22, paragraphs 0185-0186). Plante fails to disclose, a first frame is encoded in the input beam; and the first frame including an indication of a next time for the retro-reflector device to receive an incoming beam.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, a first frame is encoded in the input beam (read as, each DCD 202 receives the transmitted signal from AP 204, wherein the transmitted signal is encoded in a frame; figures 4b, 8; paragraphs 0048, 0067); and the first frame including an indication of a next time for the retro-reflector device to receive an incoming beam (read as, AP 204 transmit a P&A burst including NUM field 814, which indicates the number of consecutive time slot (i.e. INFO bursts 408) to be received/transmitted by DCD 202 with respective to each DCD 202; this is equivalent to informing each DCD 202 when (i.e. at what time slot) it is allows transmits or receives; paragraph 0067) .

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 25**, and **as applied to claim 24 above**, Plante as modified by Pollack et al. further disclose, a reflecting portion (read as, retro-reflector 179; figure 17) configured to form a reflected beam by reflecting the incoming beam along a path closely aligned with a path

of the incoming beam and to encode a second frame in the reflected beam (read as, second transceiver 175 modulates the input beam and reflects the modulated beam back to the transmit side; Plante; figure 17, paragraphs 0185-0186) (note, Pollack et al. discloses the method for medium access control by encoding medium access information within a frame and sending the frame; paragraphs 0020-0023).

Consider **claim 27**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, herein the first frame includes an indication of an amount of data for a message between a device and the retro-reflector device (read as, P&A burst includes, NUM field 814, which indicates the number of INFO bursts 408 assigned to a DCD 202, this is equivalent to the amount of data within a message transmitted by AP 204 (Pollack et al., figure 8, paragraph 0067)).

Consider **claim 29**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein an amount of data included in the second frame is determined by an amount of data indication in the first frame (note, it in inherent that AP 204 assigns the number INFO bursts 408 for a DCD 202, and that DCD 202 is only allow to transmit data that would fit in the assigned amount of INFO bursts 408 (Pollack et al.; figure 8; paragraph 0067, tables 1-2)).

Consider **claim 30**, and **as applied to claim 24 above**, Plante as modified by Pollack et al. further disclose, wherein the first frame includes an incoming message portion for a message from the device to the retro-reflector device (read as, the payload within the INFO bursts 408 which are schedule to be transmitted to a specific DCD 202; Pollack et al., figure 8, paragraphs 0067, tables 1-2).

Consider **claim 32**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein the first frame includes an incoming message portion for a message to the retro-reflector device and the second frame includes an outgoing message portion for a message from the retro-reflector device (read as, AP 204 frames the payload into the INFO bursts 408 and transmits the data from AP 202 to a specific DCD 202 (Pollack et al., figure 8, paragraphs 0067, tables 1-2); while a DCD 202 that were schedule to transmit data to AP 204, frames the payload into INFO bursts 408 and transmitted the data from the DCD 202 to AP 204 (Pollack et al., figure 8, paragraph 0067, tables 1-2)).

Consider **claim 33**, and **as applied to claim 24 above**, Plante as modified by Pollack et al. further disclose, wherein: the retro-reflector device is configured to enter a low-power mode after receiving the indication in the first frame, the retro-reflector device remaining in the low-power mode until approximately the next time (read as, after each DCD 202 decodes the P&A burst it knows when it is allow to transmit, or receives. Therefore, for any time slot that a DCD 202 is not involved in either transmitting or receiving, it can power down its receiver and transmitter circuitry to save power) (Pollack et al., figure 8, paragraph 0071).

Consider **claim 34**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein: the receiving portion is configured to receive a first preamble included in the first frame (read as, DCD 202 receives the P&A burst from AP 204 which includes the ACK field 802; Pollack et al., figure 8, paragraph 0066).

Consider **claim 35**, and **as applied to claim 34 above**, Plante as modified by Pollack et al. further disclose, wherein: the reflecting portion is configured to encode a second preamble in

the second frame (read as, the DCD 202 transmits an RA burst which includes RID field 604; Pollack et al, figure 6, paragraphs 0062).

Consider **claim 36**, and **as applied to claim 35 above**, claim 36 is rejected for the same reason as claim 13 above.

Consider **claim 37**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein: the receiving portion is configured to receive a first error correcting code included in the first frame (read as, DCD 202 receives the P&A burst from AP 204 which includes the FEC field 824; Pollack et al., figure 8, paragraph 0070).

Consider **claim 38**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein: the reflecting portion is configured to encode a second error correcting code in the second frame (read as, the DCD 202 transmits an RA burst which includes FEC field 608; Pollack et al, figure 6, paragraphs 0064)

Consider **claim 39**, and **as applied to claim 37 above**, Plante as modified by Pollack et al. further disclose, wherein: the reflecting portion is configured to encode a second error correcting code in the second frame (read as, the DCD 202 transmits an RA burst which includes FEC field 608; Pollack et al, figure 6, paragraphs 0064), and the first error correcting code is different from the second error correcting code (note, it is inherent that FEC field 824 and FEC field 608 are different from each other, since P&A burst and RA burst are carrying different data, thus their FEC field must be different from each other; Pollack et al., figures 6 and 8, paragraphs 0064, 0070).

Consider **claim 40**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. further disclose, wherein the incoming beam and the reflected beam include light waves (read as, laser beam; Plante, figure 17, paragraph 0185).

Consider **claims 41 and 42**, and **as applied to claim 25 above**, Plante as modified by Pollack et al. disclosed the invention as described above, except for, wherein the incoming beam and the reflected beam include radio frequency waves; and wherein the incoming beam and the reflected beam include acoustic waves.

The Examiner takes office notice that it would have been obvious for a person of ordinary skill in the art at the time of the invention to replace the components necessary for communications using radio frequency wave and/or acoustic wave. Since different environment necessitate different method of communicating data. For example, an in environment where there are obstacle between two communication nodes, this presents problem for light wave communication in free space, since the obstacle will block the path of the light waves; so communicating using frequency wave is a good choice. Then there are environment where the air is saturated with radio waves, then using light wave to transmit data would be a better choice. In an environment where light wave and frequency wave cannot be use, then using acoustic (Pressure) wave could be use.

Consider **claim 46**, Plante clearly show and discloses, a device configured to send an incoming beam to at least one retro-reflector device, the device comprising: a transmitter (read as, first transceiver 171; figure 17) configured to provide a carrier as an incoming beam to the at least one retro-reflector device (read as, second transceiver 176; figure 17); and a receiver configured to receive and decode a reflected beam from the at least one retro-reflector device

(note, it in inherent that the receiver is located within the first transceiver 171, since the transceiver 171 can receives and decodes an optical signal from the second transceiver 176; figure 17, paragraph 0185-0186). Plante fails to disclose, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam; and wherein: one of the first frame and the second frame includes medium access control information.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam (read as, signals transmitted between AP 204 and DCD 202 are encoded in a frame; figure 4b, paragraph 0048); and wherein: one of the first frame and the second frame includes medium access control information (read as, output frames from AP 204 includes granting/denying access to medium for each DCD 202; and output frames from DCD 202 includes requests for access to medium) (figures 6 and 8; paragraphs 0062, 0066-0068).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 47**, and **as applied to claim 46 above**, Plante as modified by Pollack et al. further disclose, wherein; the first frame includes time information indicating a next time when the device will direct the incoming beam to the at least one retro-reflector (read as, AP 204 transmit a P&A burst including NUM field 814, which indicates the number of consecutive time

slot (i.e. INFO bursts 408) to be received/transmitted by DCD 202 with respective to each DCD 202; this is equivalent to informing each DCD 202 when (i.e. at what time slot) it is allows transmits or receives; paragraph 0067).

Consider **claim 48**, and **as applied to claim 47 above**, Plante as modified by Pollack et al. further disclose, wherein: the time information is derived from a schedule (read as, AP 204 assigns time slots (i.e. INFO burst 408) to DCD 202 based on the RA burst sent from each DCD 202; Pollack et al., figures 6 and 8, paragraphs 0062-0063, 0065-0068, tables 1-2).

Consider **claim 50**, and **as applied to claim 46 above**, Plante as modified by Pollack et al. further disclose, wherein: the first frame includes an indication of a limit of an amount of data permitted between the remote device and the at least one retro-reflector during a given time period (read as, AP 204 uses NUM field 814 to assigns the number of INFO bursts for different DCD 202; thus DCD 202 can only transmit/receive data in the assigned amount of INFO burst (i.e. the amount of data transmission/reception is limited to the number of INFO burst assigned)) (Pollack et al., figure 8; paragraph 0067, tables 1-2).

Consider **claims 51-52**, and **as applied to claim 50 above**, claims 51-52 are rejected for the same reason as claim 50 above, see explanation (note, NUM field 814 can specifies both the number of INFO bursts to be received or transmitted; Pollack et al., paragraph 0067, tables 1-2).

Consider **claim 53**, and **as applied to claim 46 above**, claim 53 is rejected for the same reason as claim 12 above.

Consider **claim 54**, and **as applied to claim 46 above**, claim 54 is rejected for the same reason as claim 13 above.

Consider **claim 55**, and **as applied to claim 53 above**, Plante as modified by Pollack et al. further disclose, wherein: the second frame includes a second preamble (read as, RID field 604; figure 6), and the first preamble is different than the second preamble (read as, the ACK field 802 comprises of different data than RID field 604) (Pollack et al.; figures 6 and 8; paragraphs 0062, 0066).

Consider **claim 56**, and **as applied to claim 46 above**, claim 56 is rejected for the same reason as claim 16 above.

Consider **claim 57**, and **as applied to claim 56 above**, claim 57 is rejected for the same reason as claim 17 above.

Consider **claim 58**, and **as applied to claim 46 above**, Plante as modified by Pollack et al. further disclose, wherein: the second frame includes a second error correcting code (read as, the DCD 202 transmits an RA burst which includes FEC field 608; Pollack et al, figure 6, paragraphs 0064).

Consider **claim 59**, Plante clearly show and discloses, a system for controlling communications, the system comprising: a probe device (read as, first transceiver 171 or 221; figure 17) configured to send a first encoded signal modulated onto a carrier as an incoming beam; and a plurality of retro-reflector devices (read as, second transceivers 225; figure 22), each of the retro-reflector devices being configured to receive the first modulated signal, encode and modulate a second signal onto a reflected beam, and transmit the second encoded signal to the probe device (read as, each of the second transceiver unit 176/225 detects the incoming encoded optical signal and decodes the data; while it also encodes and modulate the incoming signal with its data and reflects the signal back to the first transceiver unit 171/221 using a retro-reflector;

paragraphs 0185-0186, 0201), wherein: each of the retro-reflector devices is configured to encode and modulate the second signal onto the reflected beam, responsive to receiving the first modulated signal in the incoming beam (read as, each second transceiver unit 176/225 encodes and modulates the incoming signal with its data and reflects the beam back to the first transceiver unit 171/221; figures 17, 22; paragraph 0185-0186, 0201). Plante fails to disclose, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam; and one of the first frame and the second frame includes medium access control information.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam (read as, signals transmitted between AP 204 and DCD 202 are encoded in a frame; figure 4b, paragraph 0048); and one of the first frame and the second frame includes medium access control information (read as, output frames from AP 204 includes granting/denying access to medium for each DCD 202; and output frames from DCD 202 includes requests for access to medium) (figures 6 and 8; paragraphs 0062, 0066-0068).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 60**, and **as applied to claim 59 above**, claim 60 is rejected for the same reason as claim 47 above.

Consider **claim 61**, and **as applied to claim 60 above**, Plante as modified by Pollack et al. further disclose, wherein: the respective one of the retro-reflector devices is further configured to enter a low-power mode after receiving the time information and to remain in the low power mode for a period based on the time information (read as, after each DCD 202 decodes the P&A burst it knows when it is allow to transmit, or receives. Therefore, for any time slot that a DCD 202 is not involved in either transmitting or receiving, it can power down its receiver and transmitter circuitry to save power) (Pollack et al., figure 8, paragraph 0071).

Consider **claim 64**, and **as applied to claim 59 above**, claim 64 is rejected for the same reason as claim 35 above.

Consider **claim 65**, and **as applied to claim 64 above**, Plante as modified by Pollack et al. further disclose, wherein: the preamble from one of the retro-reflector devices is different than the preamble from at least one other of the retro-reflector devices (read as, the RID field 604 contains unique ID number for each DCD 202, thus it is inherent that that RID field 604 of each DCD 202 is different; Pollack et al., figure 6, paragraph 0062).

Consider **claim 66**, and **as applied to claim 59 above**, claim 66 is rejected for the same reason as claim 16 above.

Consider **claim 67**, and **as applied to claim 66 above**, Plante as modified by Pollack et al. further disclosed, wherein: the error correcting code from one of the retro-reflector devices is different than the error correcting code from at least one other of the retro-reflector devices (note, it is inherent that that FEC codes are different for each DCD 202 transmitted RA burst, since the RA burst contains information unique to each DCD 202; Pollack et al., figure 6, paragraph 0064).

Consider **claim 59**, Plante clearly show and discloses, a retro-reflector device comprising: means for receiving (read as, second transceiver 176; figure 17) and decoding a first modulated signal in an incoming beam from a remote device (read as, second transceiver 176 receives encode signal from first transceiver 171, and decodes the data in the received signal; paragraph 0185); and means for forming a reflected beam (read as, retro-reflector 179; figure 17) by reflecting the incoming beam along a path closely aligned with a path of the incoming beam and for encoding a second signal in the reflected beam (read as, the second transceiver 176 modulates and encode the receive beam before reflecting the beam back) (figure 17, paragraphs 0185-0186). Plante fails to disclose, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam; and wherein: one of the first frame and the second frame includes medium access control information.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam (read as, signals transmitted between AP 204 and DCD 202 are encoded in a frame; figure 4b, paragraph 0048); and wherein: one of the first frame and the second frame includes medium access control information (read as, output frames from AP 204 includes granting/denying access to medium for each DCD 202; and output frames from DCD 202 includes requests for access to medium) (figures 6 and 8; paragraphs 0062, 0066-0068).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission

medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 69**, and **as applied to claim 68 above**, claim 69 is rejected for the same reason as claim 47 above.

Consider **claim 70**, and **as applied to claim 68 above**, claim 69 is rejected for the same reason as claim 61 above.

Consider **claim 71**, Plante clearly show and discloses, a retro-reflector transceiver device configured to: receive an incoming beam from a remote device and decode a first encoded signal included in the incoming beam (read as, second transceiver 176 receives encode signal from first transceiver 171, and decodes the data in the received signal; paragraph 0185), and form a reflected beam by reflecting the incoming beam along a path closely aligned with a path of the incoming beam and encode a second signal in the reflected beam(read as, the second transceiver 176 modulates and encode the receive beam before reflecting the beam back using retro-reflector 179) (figure 17, paragraphs 0185-0186). Plante fails to disclose, a processor for a retro-reflector transceiver; a machine-readable medium having instructions recorded thereon for the processor; a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam; and wherein: one of the first frame and the second frame includes medium access control information.

It would have been obvious for a person of ordinary skill in the art at the time of the invention to know it is inherent that the second transceiver 176 includes a processor for executing an algorithm which performs the steps of detecting an incoming encode signal from first transceiver 171, decodes the received signal, encoding and modulating the received signal,

and reflecting the optical signal back to first transceiver 171. Further, second transceiver 176 must includes a machine-readable medium for storing the algorithm to which the processor uses to executes and performs the steps above.

In related art, Pollack et al. disclose a medium access control protocol for a wireless network. Wherein, a first frame is encoded in the incoming beam and a second frame is encoded in the reflected beam (read as, signals transmitted between AP 204 and DCD 202 are encoded in a frame; figure 4b, paragraph 0048); and wherein: one of the first frame and the second frame includes medium access control information (read as, output frames from AP 204 includes granting/denying access to medium for each DCD 202; and output frames from DCD 202 includes requests for access to medium) (figures 6 and 8; paragraphs 0062, 0066-0068).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Pollack et al. with Plante. Since a free space communication system of type point to multipoint have one transmission medium that are shared by many transceivers; this it must have a protocol for controlling access to the transmission medium. The protocol taught by Pollack et al. provides an efficient method for controlling access to a transmission medium among a plurality of transceiver.

Consider **claim 72**, and **as applied to claim 71 above**, claim 72 is rejected for the same reason as claim 47 above.

Consider **claim 75**, and **as applied to claim 72 above**, claim 75 is rejected for the same reason as claim 61 above.

Consider **claim 76**, and **as applied to claim 71 above**, Plante as modified by Pollack et al. further disclosed, wherein the at least one processor is further configured to: receive a first

preamble (read as, ACK field 802; Pollack et al., figure 8) included in the first frame (read as, each DCD 202 receives an P&A burst which includes ACK field 802; Pollack et al., figure 8 paragraph 0066).

Consider **claim 77**, and **as applied to claim 76 above**, claim 75 is rejected for the same reason as claim 55 above.

Consider **claim 78**, and **as applied to claim 71 above**, Plante as modified by Pollack et al. further disclosed, wherein the at least one processor is further configured to: encode a preamble (read as, RID field 604; Pollack et al., figure 6) in the second frame (read as, each DCD 202 transmits an RA burst which includes RID field 604; Pollack et al., figure 6 paragraph 0062).

Consider **claim 79**, and **as applied to claim 71 above**, Plante as modified by Pollack et al. further disclosed, wherein the at least one processor is configured to: receive a first error checking code (read as, FEC field 824; Pollack et al., figure 6) included in the first frame (read as, each DCD 202 receives an P&A burst which includes FEC field 824; Pollack et al., figure 8 paragraph 0064).

Consider **claim 80**, and **as applied to claim 79 above**, claim 80 is rejected for the same reason as claim 17 above.

5. **Claims 6, 9, 19-21, 26 and74** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Plante (US PGPub 2004/0208602) in view of Pollack et al. (US PGPub 2006/0007885)** and further in view of **Niida et al. (US Patent # 7,123,621).**

Consider **claim 6**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. disclosed the invention as described above, except for, in the first frame, an indication of a data rate for a message within one of the first frame and the second frame.

In related art, Niida et al. disclose a data communication system includes a source node with a first connection control register, and a destination node with a second connection control register. Wherein, it includes in the first frame, an indication of a data rate for a message within one of the first frame and the second frame (read as, the connection registers for the source node and destination node, includes a field which indicates the data rate of the source and destination node; figures 5 and 6; column10 lines 10-15, 50-55, column 11 lines 20-25, 50-55).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Niida et al. with Plante as modified by Pollack et al. Since including the data rate field within the control information frame will improve bandwidth allocation efficiency, since different devices uses different data rate and by assigned appropriate bandwidth for each devise based on their data rate would reduce wasting bandwidth.

Consider **claim 9**, and **as applied to claim 2 above**, claim 9 is rejected for the same reason as claim 6 above.

Consider **claims 19 and 20**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. disclosed the invention as described above, except for, wherein the second frame includes a desired data rate for sending data from the retro-reflector device; and wherein the second frame includes a desired data rate for receiving data.

In related art, Niida et al. disclose a data communication system includes a source node with a first connection control register, and a destination node with a second connection control

register. Wherein, the second frame includes a desired data rate for sending data from the retro-reflector device; and wherein the second frame includes a desired data rate for receiving data (read as, the connection registers for the source node and destination node, includes a field which indicates the data rate of the source and destination node. The data rate fields indicate the maximum data rate and the connection data rate of the source/destination nodes and communication network, respectively. Thus, it is equivalent to setting a desired data rate for sending and receiving information over the network; figures 5 and 6; column10 lines 10-15, 50-55, column 11 lines 20-25, 50-55.

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Niida et al. with Plante as modified by Pollack et al. Since including the data rate field within the control information frame will improve bandwidth allocation efficiency, since different devices uses different data rate and by assigned appropriate bandwidth for each devise based on their data rate would reduce wasting bandwidth.

Consider **claim 21**, and **as applied to claim 6 above**, Plante as modified by Pollack et al. and further modified by Niida et al. disclosed the invention as described above, except for, in the second frame, the message having an amount of data that is limited based on the indication of the data rate.

It would have been obvious for a person of ordinary skill in the art at the time of the invention to know that it is inherent that data rate limits the amount of data transferred. For example, communication between nodes comprises of data rates of X and Y where, X>Y; and transmission time T. For transmission of data with data rate X for time T the total amount of

data would be greater than transmission of data with data rate Y for time T. Since higher data rate equates to more data between transferred from one place to another place.

Consider **claim 26**, and **as applied to claim 25 above**, claim 26 is rejected for the same reason as claims 6 and 21 above (note, it is inherent that data rate limits the amount of data transferred. For example, communication between nodes comprises of data rates of X and Y where, X>Y; and transmission time T. For transmission of data with data rate X for time T the total amount of data would be greater than transmission of data with data rate Y for time T. Since higher data rate equates to more data between transferred from one place to another place).

Consider **claim 74**, and **as applied to claim 71 above**, claim 74 is rejected for the same reason as claims 6 and 21 above.

6. **Claims 18, 22, 31, 62 and 73** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Plante (US PGPub 2004/0208602) in view of Pollack et al. (US PGPub 2006/0007885)** and further in view of **Bensaou et al. (US Patent # 6,934,297)**.

Consider **claim 18**, and **as applied to claim 1 above**, Plante as modified by Pollack et al. disclosed the invention as described above, except for, the second frame includes desired future time information for receiving an input beam from the remote device.

In related art, Bensaou et al. disclose a method for communicating in a distributed multiple access communication system. Wherein, the second frame includes desired future time information for receiving an input beam from the remote device (read as, communication unit 110 transmits a request to send (RTS) packet to another communication unit 105; wherein the unit 110 calculated a delay time and packetised the delay time within the RTS packet. Communication unit 105, receives the RTS packet and extract the delay time; if the transmission

medium is available, the unit 105 transmit a clear to send (CTS) packet to the unit 110, only after the expiration of the delay time extracted from RTS packet; Figures 1-3, abstract; column 4 lines 10-30).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Bensaou et al. with Plante as modified by Pollack et al. Since the method taught by Bensaou et al. improve data collision avoidance between communication units. Thus reducing the errors in the communication network and improve transmission efficiency.

Consider **claim 22**, and **as applied to claim 2 above**, claim 22 is rejected for the same reason as claim 18 above.

Consider **claim 31**, and **as applied to claim 25 above**, claim 31 is rejected for the same reason as claim 18 above.

Consider **claim 62**, and **as applied to claim 59 above**, claim 62 is rejected for the same reason as claim 18 above.

Consider **claim 73**, and **as applied to claim 71 above**, claim 73 is rejected for the same reason as claim 18 above.

7. **Claims 43-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Plante (US PGPub 2004/0208602)** in view of **Pollack et al. (US PGPub 2006/0007885** and further in view of **Sayyah et al. (US Patent # 7,142,348)**.

Consider **claim 43**, and **as applied to claim 40 above**, Plante as modified by Pollack et al. disclosed the invention as described above, except for, wherein: the retro-reflector device includes a cat's eye retro-reflector.

In related art, Sayyah et al. disclose a retro modulator optical apparatus. Wherein, the retro-reflector device includes a cat's eye retro-reflector (read as, the modulated retro-reflective (MRR) device 10 is a cat's eye type retro-reflector; figure 1, column 7 lines 5-11).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Sayyah et al. with Plante as modified by Pollack et al. Because using a cat's eye type retro-reflector, the field of view of the transceiver is increase. Thus allowing more light to enter and more light to be reflected, hence improving returning optical signal from retro-reflector.

Consider **claim 44**, and **as applied to claim 43 above**, Plante as modified by Pollack et al. and further modified by Sayyah et al further disclose, wherein: the reflecting portion includes at least one quantum well (read as, MRR 10 is made from an array of multiple quantum well (MQW) devices arranged as an array of pixels 12; Sayyah et al., figure 1), a surface of the at least one quantum well being configured to have varying reflectivity, such that the second frame may be encoded in the reflected beam by changing the reflectivity of at least one of the quantum wells while the incoming beam is hitting the one of the quantum wells (read as, quantum wells are use to modulated incident light and retro-reflect the incident light; light is modulated by control the reflectively of the quantum wells) (Sayyah et al., figure 1, column 7 lines 10-17, lines 50-58; and column 9 lines 39-52).

Consider **claim 44**, and **as applied to claim 43 above**, Plante as modified by Pollack et al. and further modified by Sayyah et al further disclose, wherein: the at least one quantum well includes a positive-intrinsic-negative diode, such that the at least one quantum well is configured

to detect the light waves (read as, PIN diodes are located within the quantum wells, which is use for detecting light waves; Sayyah et al., figure 3b, column 11 lines 5-10, claim 7).

Allowable Subject Matter

8. **Claims 11, 23, 28, 49 and 63** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Eichweber, Kurt; 4,143,263

b) Eichweber, Kurt; 4,662,003

c) Gould et al.; 4,777,660

d) Meyzonnette et al.; 4,887,310

e) Horst et al.; 4,941,205

f) Fergason, James L.; 4,983,021

g) Tsumura, Toshihiro; 5,117,301

h) Sun et al.; 5,819,164

i) Zhao et al.; 6,115,168

j) Green et al.; 6,624,916

k) Hoffberg, Steven M.; 6,791,472

l) Pavelchek, Andrew; 2006/0291864

m) Rolston et al.; 2002/0031199

n) Sparr et al.; 2002/0176390

o) Raleigh et al.; 6,816,546

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Thi Le

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER